

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Pending Claims:**

1. (cancelled).
2. (currently amended): An emulator for modeling a plurality of signal impairments which manifest themselves onto a communication data signal between modulation and demodulation in a communication system, the emulator comprising:
  - a plurality of programmable transmit modules emulating a plurality of signal impairments that occur during communication media modulation, each said transmit module having a signal input for coupling with a transmit modem, an output and a communication bus coupling;
  - a plurality of programmable receive modules emulating a plurality of signal impairments that occur during communication media demodulation, each said receive module having a signal input, an output for coupling with a receive modem and a communication bus coupling;
  - a user interface communicating with a processor for defining a communication system ~~simulation~~ emulation by soft coupling a required number of

said transmit and receive modules in a user defined ~~simulation~~ arrangement ~~using~~  
~~said transmit module outputs and said receive module inputs~~; and

said processor instructing each of said required modules via a communication bus to use specific signal impairments from said plurality of respective signal impairments for said user defined ~~simulation~~ arrangement.

3. (original): The emulator according to claim 2 wherein said plurality of transmit module impairments further comprise linear impairments.

4. (original): The emulator according to claim 3 wherein said transmit module linear impairments further comprise:

amplitude imbalance;  
bandwidth group delay;  
bandwidth limitations;  
carrier frequency offset;  
carrier leakage;  
carrier phase imbalance;  
carrier phase noise;  
carrier phase offset  
modem noise; and  
transmitter noise.

5. (original): The emulator according to claim 4 wherein said plurality of transmit module impairments further comprise non-linear impairments.

6. (original): The emulator according to claim 5 wherein said transmit module non-linear impairments further comprise:

amplitude modulation to amplitude modulation; and  
amplitude modulation to phase modulation.

7. (original): The emulator according to claim 6 wherein said plurality of receive module impairments further comprise linear impairments.

8. (original): The emulator according to claim 7 wherein said receive module linear impairments further comprise:

amplitude imbalance;  
bandwidth group delay;  
bandwidth limitations;  
carrier frequency offset;  
carrier dc offset;  
carrier phase imbalance;  
carrier phase noise;

carrier phase offset

modem noise; and

receiver noise.

9. (original): The emulator according to claim 8 wherein said plurality of receive module impairments further comprise non-linear impairments.

10. (original): The emulator according to claim 9 wherein said receive module non-linear impairments further comprise:

amplitude modulation to amplitude modulation; and

amplitude modulation to phase modulation.

11. (original): The emulator according to claim 10 further comprising a plurality of programmable media modules emulating a plurality of signal impairments that occur during signal transmission through a communication channel media, each said media module having a signal input for coupling with the output of a transmit module, a signal output for coupling with the input of a receive module and a communication bus coupling for coupling with said communication bus.

12. (original): The emulator according to claim 11 wherein said media module emulates guided and unguided communication channel media impairments.

13. (original): The emulator according to claim 12 wherein said guided media impairments comprise attenuation and delay.

14. (original): The emulator according to claim 13 wherein said unguided media impairments comprise value fluctuation, location characteristics and distance characteristics.

15. (original): An emulator for modeling at least one signal impairment which is manifest onto a communication data signal between modulation and demodulation in a communication system, the emulator comprising:

at least one programmable transmit module emulating at least one signal impairment that occurs during communication media modulation, said at least one transmit module having a signal input for coupling with a transmit modem, an output and a processor interface;

at least one programmable receive module emulating at least one signal impairment that occurs during communication media demodulation, said at least one receive module having a signal input, an output for coupling with a receive modem and a processor interface; and

a processor, with associated memory, for configuring said transmit and receive modules via selected characteristics stored in memory.

16. (original): The emulator of claim 15 wherein said at least one transmit module impairment emulates a dynamic impairment.

17. (original): The emulator of claim 16 wherein said dynamic impairment comprises at least one of the following of sine waveform; swept sine waveform; square waveform; sawtooth waveform; or impulse waveform.

18. (original): The emulator of claim 15 wherein said at least one receive module emulates a dynamic impairment.

19. (original): The emulator of claim 18 wherein said dynamic impairment comprises at least one of the following of sine waveform; swept sine waveform; square waveform; sawtooth waveform; or impulse waveform.

20. (original): The emulator of claim 15 further comprising at least one programmable media module emulating at least one signal impairments that occur during signal transmission through a communication channel media, each said media module having a signal input for coupling with the output of a transmit

module, a signal output for coupling with the input of a receive module and a processor interface.

21. (original): The emulator of claim 15 wherein said at least one transmit module impairment further comprises a linear impairment.

22. (original): The emulator according to claim 16 wherein said transmit module linear impairments further comprise at least one of the following of amplitude imbalance; bandwidth group delay; bandwidth limitations; carrier frequency offset; carrier leakage; carrier phase imbalance; carrier phase noise; carrier phase offset; modem noise; or transmitter noise.